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ABSTRACT

The present invention provides structures of small molecules capable of modulating apoptotic cell death. More specifically, the structures relate to the structures of apoptotic active sites of mammalian alpha-fetoprotein (AFP) and albumin. Peptides mimicking the active site contain two sequences, Arg-Gly-Asp and Asp-X-X-Asp, wherein X means any amino acid. These sequences are needed in the same molecule for causing a wide range of biological activities. The peptides can be utilized to suppress apoptotic pathways by inhibiting the cytochrome c-mediated caspase activation. Thus, the peptides can be used to inhibit effects of apoptosis induced by oxidative stress, drugs, cytokines, Fas-ligand, alpha-fetoprotein, used to prevent apoptosis in culturing cells, in organ transplantation, in immunological autoimmune disorders and immunodeficiency syndrome induced by viral infection, or to diminish side cytotoxic effects after chemotherapy and radiation therapy.